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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/810,297	03/26/2004	Luigi Tallone	36030312 US02	9276

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EXAMINER

CHIEM, DINH D

ART UNIT	PAPER NUMBER
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2883

DATE MAILED: 04/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/810,297

Applicant(s)

TALLONE ET AL.

Examiner

Erin D. Chiem

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on December 13, 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☒ Claim(s) 1 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 March 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☒ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☒ Certified copies of the priority documents have been received in Application No. 10/810297.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This office action is in response to the amendment filed on December 30, 2004. The applicant did not amend any claims, thus claims 1-14 are pending.

Priority

This application claims foreign priority 0307492.9 filed at the European Patent Office on April 1, 2003.

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the length of optical waveguide and length of optical fiber must be shown together in one embodiment since the two features are not claimed in the alternative. The claimed features as pointed out must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet"

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pursuant to 37 CFR 1.121(d). If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

2. Regarding claim 1, the phrases "at least one optical component" and "can be" used in conjunction renders the claim indefinite because it is unclear whether the limitation(s) is comprised in the arrangement or not. Furthermore, with broad claim interpretation, the claim indicates there may be more than one optical component; therefore, the indefiniteness of the two phrases, when used in conjunction with one another, do not indicate whether the optical component is assembled in the arrangement. Moreover, when there is more than one optical component, there is no means to differentiate the various optical components.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2 and 9 – 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Doerr et al. (US 6,275,317 B1).

3. Regarding claim 1, 2, 9 – 14, Doerr et al. disclosed an optical transmitter (100) in Figure 1 having a silicon optical bench substrate (120), (col. 4 line 54-61), and (col. 7, line 26-30), with an array of input optical fibers (w1, - w6), an output optical waveguide in the same plane (125). Interposed between the input optical fibers and output optical fibers is an optical isolator (140),

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the two ball lenses (155, 160) set inside pyramid-shaped pits (col. 8, line 34 – 36), and having the isolator interposed in between the two ball lenses. A length of fiber on the substrate (125), and is connected to the output fiber with a ferrule (135). Regarding claim 10, Doerr et al. further explain that the optical isolator send the focused light from the collimator to the amplifier/modulator (col. 10, line 17-20). Regarding claim 11, although Doerr et al. do not explicitly show a filter in the drawings; however, in column 15, line 1-6, Doerr et al. indicate that through experimentation a 1.87 GHz electronic filter was used to produce the result shown in Figure 22 (A-J). Regarding claim 14, Doerr et al disclose using a ball lens (155, 160) to collimate and project an optical radiation. The ball lens is meets the claim of being at least one optical component comprises a symmetrical optical system having an internal image.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 3 – 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Doerr et al. (US 6,275,317 B1) in view of Hehmann (US 6,081,635). Claims 3 and 4 are dependent on independent claim 1, and Doerr et al. disclosed all the limitations of claim 1, but does not disclose the respectively v-grooves having the same geometry. Hehmann (US 6,081,635) discloses having two v-grooves (V1 , V2) so that their positions are precisely fixed. This

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indicates that the two grooves must have the same symmetry in order for the precise alignments of the two fibers (LWL1, LWL2). The perfect alignment will help a person having ordinary skill in the art to modify the optical transmitter of Doerr et al. to implement a single input fiber rather than using an array of fibers and a combiner. Since Doerr et al. and Hehmann are both from the same field of endeavor; the purpose disclosed by Hehmann would have been recognized in the pertinent art of Doerr et al. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to have two v-grooves etched onto the silicon optical bench for the alignment of one input fiber with the one output fiber. The motivation for etching multiplicity of v-grooves onto the silicon optical bench is for the purpose of providing flexibility when one in the art would want to implement one a single input rather than an array of inputs.

6. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Doerr et al (US 6,275,317 B1) in view of Drake (US 5,999,303). Doerr et al. discloses all of the limitations of independent claim 1 but does not disclose the limitation of using optical fibers from the same fiber batch for the input and length of fiber on the substrate. Drake (US 5,999,303) discloses using input and output fibers from the same manufacturing batch having very precise lengths for both lengths of input and output fibers (col. 16, line 3-6) for the purpose of maintaining the same fiber characteristics in an optical system. Since Doerr et al. and Drake are both from the analogous field of endeavor; the purpose disclosed would have been recognized in the pertinent art of Doerr et al. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to use optical fibers that were drawn from the same batch in implementing on one optical system. The motivation for using optical fibers drawn from the

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same batch is to maintain the closely similar characteristics of the optical fibers such as having substantially same core index, cladding index, low level of impurities, etc.

7. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Doerr et al. (US 6,275,317 B1). Doerr et al. discloses of coating the output facet of the optical amplifier/modulator with TiO_2 anti-reflective coating to minimize reflections between the optical amplifier/modulator and the output fiber (Col. 10, line 27 – 30), but does not expressly disclose applying the anti-reflective coating on the respective ends of the length of fiber and the output fiber. Since the motivation of applying the anti-reflective coating on the respective ends facets of amplifier/modulator or fibers is for index of refraction matching to minimize scattering of optical radiation and maximize transmission, it is obvious to coat the adjoining ends of two lengths of fibers or end facets of an amplifier/modulator connecting to a length of output fiber.

8. Claim 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Doerr et al. (US 6,275,317 B1) in view of Tabuchi (US 5,611,006). Doerr et al. discloses all the limitations of claim 1, but does not disclose having the output waveguide and the length of optical waveguide on the substrate aligned along an input-to output propagation path, and furthermore, the end surfaces of the optical components arrangement are offset to the perpendicular to said input-to-output propagation path, the propagation path of radiation through said through at least one optical component is at an angle with respect to the main input-to-output propagation path. Tabuchi discloses arranging the incident planes of the optical-isolator in parallel with the surface of the silicon substrate and inclined by a predetermined angle relative to the main optical axis (col. 4, line 19-23) for the purpose of reducing back reflection of the optical signal along to propagating axis. Since Doerr et al. are both from the same field of endeavor; the purpose

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disclosed by Tabuchi would have been recognized in the pertinent art of Doerr et al. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to offset the alignment of at least one optical component in the mounting arrangement. The motivation would have been for reducing back reflection of the transmitted optical radiation.

Response to Arguments

9. Applicant's arguments filed on December 30, 2004 have been fully considered but they are not persuasive. In light of the Applicant's argument to clarify the differences of the "length of optical waveguide" and the "length of optical fiber"; the Applicant's arguments essentially consummates to two points: 1) the Examiner's applied references do not teach the length of optical waveguide between at least one optical component, such as the combiner 110, and one or more optical component. 2) The Examiner's applied references do not teach the additional length of fiber that is distinct from fiber 125. The Examiner respectfully point out the Doerr et al. clearly anticipated the claimed limitations. The foundation of Doerr et al. invention is planar lightwave circuits (PLCs). Doerr et al. demonstrated this technology in two elements of their invention, substrate 1 and 3 (S_1 , S_3) and furthermore, optical isolator 110 utilize is built on a slab waveguide as well (col. 6, line 27-28). Therefore, in light of the clarification, the Examiner respectfully reassert that Doerr et al. teach "a length of optical waveguide" as being the slab waveguide 110 interposed between the input fiber and at least one optical component.

Regarding the Applicant's argument on the length of optical fiber, as evident in Fig. 1, there are two ferrules (130 and 135) and ferrules are well known tools to couple two lengths of optical fibers. The Examiner would like to point out that the drawings are exemplary. Although Fig. 1

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drawn the bar between 130 to 135 as a continuous bar to represent the optical fiber 125, however, one of ordinary skill in the art would not employ expensive ferrules to connect one continuous fiber. Therefore, it would be an inherent feature of Doerr et al. to have a length of optical fiber disposed between an optical component, the ferrule 130 and the output fiber, as seen being coupled to fiber 125 by ferrule 135.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erin D. Chiem whose telephone number is (571) 272-3102. The examiner can normally be reached on Monday - Thursday 9AM - 5PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Erin D Chiem
Examiner
Art Unit 2883

Frank G. Font,
Supervisory Patent Examiner
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EDC